

AMENDMENTS TO THE SPECIFICATION

Please replace the PCT title of this application with the following rewritten title:

--PROCESS FOR PRODUCING SINTERED ALUMINUM NITRIDE
FURNISHED WITH VIA HOLE --

Please replace the Abstract on page 51 with the following rewritten Abstract of the Disclosure, which is also submitted herewith on a separate page:

--A sintered aluminum nitride having satisfactorily densified via holes, which is free from cracking and has an excellent appearance, is produced through firing an aluminum nitride molding having at least one highly isolated through-hole for via hole formation. At least one through-hole for formation of dummy via holes not used for electrical connection is formed around the highly isolated through-hole for via hole formation, and the through-hole for dummy via hole formation is also filled with a conductive paste. Thereafter, the aluminum nitride molding is fired into the sintered aluminum nitride.---

Please replace the paragraph beginning at page 4, line 3, with the following rewritten paragraph:

-- In particular, according to one aspect of the present invention, a process is provided for producing a sintered aluminum nitride furnished with via holes, comprising providing an aluminum nitride molding having through-holes for via hole formation and through-holes for formation of dummy via holes not used for electrical ~~connect~~ connection, filling the through-holes for via hole formation and the through-holes for dummy via hole formation with a conductive paste and firing the aluminum nitride molding and conductive paste.

~~wherein~~ In the above process, the aluminum nitride molding is furnished with the through-holes for via hole formation and the through-holes for dummy via hole formation so that the through-holes for via hole formation having been filled with the conductive paste and the aluminum nitride molding respectively exhibit a firing shrinkage factor (X_v , %) and a firing shrinkage factor (X_s , %) whose difference, ($X_v - X_s$), is in the range of -1.0 to 9.5%. --

Please replace the paragraph beginning at page 8, line 1, with the following rewritten paragraph:

-- Therefore, in the present invention, in order to eliminate the influence of the shrinkage factor difference between conductive portions and sintered portions of aluminum nitride, the aluminum nitride molding is furnished with not only the through-holes 2 for via hole formation but also the through-holes 3 ~~of~~ for formation of dummy via holes not used for electrical ~~connected~~ connection to thereby appropriately regulate the values of (Xv) and (Xs).--

Please replace the paragraph beginning at page 10, line 20, with the following rewritten paragraph:

-- With respect to other through-holes for via hole formation which are present across the boundary of the region around the highly isolated through-hole, only the volumes of via hole portions lying within the region are included in the ~~summing~~ sum. --

Please replace the paragraph beginning at page 11, line 15, with the following rewritten paragraph:

-- The most remarkable characteristic of the present invention resides in that, in the production of a substrate of sintered aluminum nitride from the aluminum nitride molding having highly isolated through-holes 2 for via hole formation, at least one through-hole 3 for formation of dummy via holes not used for electrical ~~connected~~ connection on the substrate after firing is formed around each of the highly isolated through-holes 2 for via hole formation. --

Please replace the paragraph beginning at page 19, line 6, with the following rewritten paragraph:

-- The refractory metal powder can be used without any particular limitation as long as its melting point is higher than the sintering temperature of aluminum nitride. For example, a metal such as tungsten or molybdenum can preferably be used as the refractory metal. The generally preferably employed the refractory metal powder has an average particle diameter, measured by the Fischer's method, of 1 to 2.5 μm . The refractory metal

powder having an average particle diameter of 1.6 to 2 μm is optimum because ~~the~~ via hole cracking after firing is effectively prevented. --

Please replace the paragraph beginning at page 23, line 21, with the following rewritten paragraph:

-- The temperature to be employed in the dewaxing, although it can appropriately be selected, is generally in the range of 500 to 1200°C, preferably 700 to 900°C. The heating rate to reach this temperature, although not particularly limited, is generally preferred to be not greater than 10°C/min. --

Please replace the paragraph beginning at page 24, line 17, with the following rewritten paragraph:

-- When the residual carbon ratio of aluminum nitride molding is less than 800 ppm, the thermal conductivity of sintered aluminum nitride would not be satisfactorily high. On the other hand, when the residual carbon ratio exceeds 3000 ppm, the sinterability of the refractory metal powder would become so low that it would be difficult to satisfactorily promote the densification of via holes. Thus, the problems of cracking and drop of the positional accuracy of via holes are likely to occur. Further, cracking of the sintered portion of aluminum nitride and an increase of warp of sintered aluminum nitride would occur with the result that it would be difficult to satisfactorily attain the object of the present invention.--

Please replace the paragraph beginning at page 27, line 8, with the following rewritten paragraph:

-- On the other hand, when the second-step firing temperature exceeds 1950°C, not only would the adhesion strength between via holes and the sintered aluminum nitride be lowered, but also, failures such as the warp or deformation of the sintered aluminum nitride would tend to occur. --

Please replace the paragraph beginning at page 27, line 24, with the following rewritten paragraph:

-- The most appropriate working mode for carrying out the present invention comprises using, as the conductive paste, a composition comprising 100 parts by weight of the refractory metal, 2 to 10 parts by weight of aluminum nitride powder and 2 to 9 parts by

weight of an organic vehicle; dewaxing the aluminum nitride molding so that the residual carbon ratio of the aluminum nitride molding falls within the range of 800 to 3000 ppm; and performing the first-step firing at 1200 to 1700°C and the second-step firing at 1800 to 1950°C. --

Please replace the paragraph beginning at page 29, line 24, with the following rewritten paragraph:

-- Furthermore, the formed thin film can be patterned into the desired morphology. In the patterning, known techniques such as the metal mask method, wet etching method, liftoff method and dry etching method can be employed without any particular limitation. In the present invention, the dummy via holes obtained by sintering the through-holes for dummy via hole formation are disposed at a locality not brought into contact with the above thin film pattern and are not used for electrical connection of two surfaces opposite to each other. --